CLAIMS.

WHAT IS CLAIMED IS:

1. A self-extinguishing cable comprising a conductor and a flame-retardant coating, characterized in that the said flame-retardant coating comprises:

(a) an ethylene homopolymer or copolymer having a density of from 0.905 to 0.970 g/cm^3, and being selected from: ethylene homopolymers; copolymers of ethylene with an alpha-olefin; copolymers of ethylene with an ethylenically unsaturated ester; or mixtures thereof;

(b) a copolymer of ethylene with at least one alpha-olefin, and optionally with a diene, said copolymer (b) having a density of from 0.860 to 0.904 g/cm^3, and being characterized by a composition distribution index greater than 45%, said index being defined as the weight percentage of copolymer molecules having an alpha-olefin content within 50% of the average total molar content of alpha-olefin;

(c) natural magnesium hydroxide in an amount such as to impart flame-retardant properties;

wherein at least one of the polymeric components (a) and (b) contains hydrolyzable organic silane groups grafted onto the polymer chain.

2. The cable according to claim 1, wherein the polymeric component (a) is selected from: high density polyethylene (HDPE) having a density of at least 0.940 g/cm^3; medium density polyethylene (MDPE) having a density of from 0.926 to 0.940 g/cm^3; low density polyethylene (LDPE) and linear low density polyethylene (LLDPE) having a density of from 0.910 to 0.926 g/cm^3; copolymers of ethylene with at least one ester selected from: alkyl acrylates, alkyl methacrylates and vinyl carboxylates, wherein the alkyl group, linear or branched, has from 1 to 8 carbon atoms, while the

carboxylate group, linear or branched, has from 2 to 8 carbon atoms.

3. Cable according to anyone of the previous claims, wherein the polymeric component (b) has a Molecular Weight Distribution (MWD) index of less than 5.

4. Cable according to anyone of the previous claims, wherein the polymeric component (b) is produced by copolymerization of ethylene with an alpha-olefin, and optionally with a diene, in the presence of a single-site catalyst.

5. Cable according to anyone of the previous claims, wherein the natural magnesium hydroxide is obtained by grinding a mineral based on magnesium hydroxide.

6. Cable according to anyone of the previous claims, wherein the amount of natural magnesium hydroxide is predetermined so as to obtain a Limited Oxygen Index (LOI) value of at least 30, measured on compression moulded plates according to ASTM Standard D-2863.

7. Cable according to anyone of the previous claims, wherein the amount of natural magnesium hydroxide is between 10 and 90% by weight with respect to the total weight of the composition.

8. Cable according to anyone of the previous claims, wherein the amount of the ethylene homopolymer or copolymer (a) is such that the flame-retardant coating obtained after extrusion has a value of thermocompression resistance, measured at 90°C according to CEI standard 20-34/3-1, greater than 50%.

9. Cable according to anyone of the previous claims, wherein the amount of the copolymer of ethylene with an alpha-olefin (b) is such that the flame-retardant coating obtained after extrusion has an elongation at break, measured according to CEI standard

20-34 § 5.1, of at least 100% and a modulus at 20%, measured according to CEI standard 20-34 § 5.1, of less than 12 MPa.

10. Cable according to anyone of the previous claims, wherein the flame-retardant coating comprises, as polymer matrix, a mixture comprising from 10 to 60% by weight of an ethylene homopolymer or copolymer (a), and from 40 to 90% by weight of a copolymer (b), the percentages being referred to the total weight of the polymeric components (a) and (b).

11. Cable according to anyone of the previous claims, wherein the hydrolyzable organic silane groups are grafted onto the polymer chain during compounding of the flame-retardant coating by adding to the polymer mixture a radical initiator and an organic silane compound containing at least one hydrolyzable group and at least one ethylenically unsaturated hydrocarbon group.

12. Cable according to claim 11, wherein the organic silane is added to the mixture in an amount of from 0.5 to 10 parts by weight with respect to 100 parts by weight of the polymer matrix.

13. Cable according to claim 11 or 12, wherein the radical initiator is added to the mixture in an amount of from 0.01 to 1 parts by weight with respect to 100 parts by weight of the polymer matrix.

14. A flame-retardant composition comprising:

(a) an ethylene homopolymer or copolymer having a density of from 0.905 to 0.970 g/cm^3, and being selected from: ethylene homopolymers; copolymers of ethylene with an alpha-olefin; copolymers of ethylene with an ethylenically unsaturated ester; or mixtures thereof;

(b) a copolymer of ethylene with at least one alpha-olefin, and optionally with a diene, said

copolymer (b) having a density of from 0.860 to 0.904 g/cm^3, and being characterized by a composition distribution index greater than 45%, said index being defined as the weight percentage of copolymer molecules having an alpha-olefin content within 50% of the average total molar content of alpha-olefin;

(c) natural magnesium hydroxide in an amount such as to impart flame-retardant properties;

wherein at least one of the polymeric components (a) and (b) contains hydrolyzable organic silane groups grafted onto the polymer chain.

15. A method for producing a self-extinguishing cable, said method comprising the following steps: (1) preparing a polymer mixture having flame-retardant properties; (2) extruding said mixture on a conductor optionally pre-coated with an insulating layer, characterized in that step (1) comprises mixing a polymer matrix with a predetermined amount of natural magnesium hydroxide, and further adding a radical initiator and an organic silane compound containing at least one hydrolyzable group and at least one ethylenically unsaturated hydrocarbon group, in order to obtain grafting of hydrolyzable organic silane groups onto the polymer chains;

said polymer matrix comprising:

(a) an ethylene homopolymer or copolymer having a density of from 0.905 to 0.970 g/cm^3, and being selected from: ethylene homopolymers; copolymers of ethylene with an alpha-olefin; copolymers of ethylene with an ethylenically unsaturated ester; or mixtures thereof;

(b) a copolymer of ethylene with at least one alpha-olefin, and optionally with a diene, said copolymer (b) having a density of from 0.860 to 0.904 g/cm^3, and being characterized by a composition

distribution index greater than 45%, said index being defined as the weight percentage of copolymer molecules having an alpha-olefin content within 50% of the average total molar content of alpha-olefin.

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